

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of Atty. Docket
MARK J.W. MERTENS ET AL. PHNL 021458
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AUDIO BASED DATA REPRESENTATION APPARATUS AND METHOD

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPEAL BRIEF

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(i) Real Party in Interest

The real party in interest in this application is KONINKLIJKE PHILIPS ELECTRONICS N.V. by virtue of an assignment from the inventors recorded on May 17, 2005, at Reel 017266, Frame 0996.

(ii) Related Appeals and Interferences

There are no other appeals and/or interferences related to this application.

(iii) Status of Claims

Claims 1-10 stand finally rejected by the Examiner. Claim 11 has been cancelled. The rejection of claims 1-10 is being appealed.

(iv) Status of Amendments

There was one Response filed on November 16, 2009, after final rejection of the claims on October 9, 2009, this Response having been entered and considered by the Examiner.

(v) Summary Of Claimed Subject Matter

The subject invention relates to:

Claim 1

A data representation apparatus for representing data by means of an audio signal (**Fig. 1a: 100; specification: page 7, lines 10-11**), said data representation apparatus comprising an audio processing unit (**Fig. 1a: 102; specification: page 7, lines 11-13**) for delivering the audio signal (**Fig. 1a: o; specification: page 7, line 12**) with a characteristic (**Fig. 1a: (C); specification: page 7, line 12**) dependent upon a positionless data signal (**Fig. 1a: p; specification: page 7, lines 13-15**) having at least a first value and a second value; and a mapping unit for mapping the first value of the positionless data signal to a first position in three-dimensional space around a user's head, and the second value of the positionless data signal to a second position in three-dimensional space (**Fig. 1a: 132; specification: page 9, lines 14-16**), wherein the audio processing unit (**Fig. 1a: 102**) changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value (**Fig. 2; specification: page 11, lines 1-9**).

Claim 2

The data representation apparatus as claimed in claim 1, wherein the audio processing unit (**Fig. 1a: 102**) comprises a filter (**Fig. 1a: 140; specification: page 10, lines 1-9**) for applying a head related transfer functions (**Fig. 1a: HRTF**) to an input audio signal (**Fig. 1a: i**) to obtain the output audio signal (**Fig. 1a: o(C)**) appearing to originate from the first position and the second position.

Claim 3

The data representation apparatus as claimed in claim 1, wherein said data representation apparatus further comprises a data signal distributor (**Fig. 1a: 122; specification: page 7, line 30 to page 8, line 7**) for delivering the positionless data signal, derivable from a measurement from a measurement device (**Fig. 1a: 104**), to the audio processing unit (**Fig. 1a: 102**).

Claim 6

The data representation apparatus as claimed in claim 1, wherein said data representation apparatus further comprises specification means (**Fig. 1a: 150; specification: page 9, lines 16-20**) for specifying a preferred mapping for the mapping unit.

Claim 7

The data representation apparatus as claimed in claim 1, wherein said data representation apparatus further comprises selection means (*Fig. 1a: 117; specification: page 10, lines 24-27*) for enabling presentation of a first set of data signal values by a first type of the audio signal and a second set of data signal values by a second type of the audio signal.

Claim 8

A system for representing data by means of an audio signal, said system comprising an audio source for supplying an input audio signal (*Fig. 1a: 114, 116; specification: page 7, lines 22-24*); a source of a positionless data signal having at least a first value and a second value (*Fig. 1a: 104, 124; specification: page 7, lines 25-27*); a sound production device (*Fig. 1a: 112; specification: page 7, lines 18-20*); and a data representation apparatus for representing data by means of the audio signal (*Fig. 1a: 100; specification: page 7, lines 10-11*), wherein the data representation apparatus comprises an audio processing unit (*Fig. 1a: 102; specification: page 7, lines 11-13*) for providing the audio signal (*Fig. 1a: o; specification: page 7, line 12*) to the sound production device (*Fig. 1a: 112*) with a characteristic (*Fig. 1a: (C); specification: page 7, line 12*) dependent on the value of the positionless data signal (*Fig. 1a: p; specification: page 7, lines 13-15*); and a mapping unit for mapping the first value of the positionless data signal to a first position in three-dimensional

space around a user's head, and the second value of the positionless data signal to a second position in three-dimensional space (**Fig. 1a: 132; specification: page 9, lines 14-16**), wherein the audio processing unit changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value (**Fig. 2; specification: page 11, lines 1-9**).

Claim 9

A method of representing data by means of an audio signal, said method comprising the steps of processing and delivering the audio signal (**Fig. 1a: 102; specification: page 7, lines 11-13**) with a characteristic dependent on a positionless data signal (**Fig. 1a: p; specification: page 7, lines 13-15**) having at least a first value and a second value; and mapping the first value of the positionless data signal to a first position in a three-dimensional space around a user's head, and the second value of the positionless data signal to a second position in the three-dimensional space (**Fig. 1a: 132; specification: page 9, lines 14-16**), wherein the processing and delivering step includes changing the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the

second position when the positionless data signal has the second value (***Fig. 2; specification: page 11, lines 1-9***).

Claim 10

A computer-readable storage medium having stored thereon a computer program for execution by a processor (***Fig. 6: 600; specification: page 13, lines 27-29***), enabling the processor to execute the method of claim 9.

(vi) Grounds of Rejection to be Reviewed on Appeal

- (A) Whether the invention, as claimed in claim 10, is directed to non-statutory subject matter under 35 U.S.C. 101.
- (B) Whether the invention, as claimed in claims 1-10, is unpatentable, under 35 U.S.C. 103(a), over U.S. Patent 7,138,575 to Childs, Jr. et al. in view of U.S. Patent 7,167,567 to Sibbald et al.

(vii) Arguments

(A) Whether claim 10 Is Non-Statutory.

35 U.S.C. 101 states:

"Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."

The Examiner states "the specification as amended discloses that the computer-readable medium may be realized as data stored on a data carrier (p. 1 and p. 13) or transmitted over a signal transmission system (p. 13). Such disclosure of the computer program product does not enable the claimed "a computer-readable medium" falling within the statutory classes of invention. Although an example has been provided to define "a data carrier" as a computer-readable medium, but the specification and claim 10 fails to exclude the computer readable medium from a transitory media."

Appellants submit that the Examiner is mistaken. The specification as filed, on page 1, line 20 states "The invention also relates to a data carrier storing the computer program.", while on page 13, lines 27-29, states "The invention can be implemented by means of hardware or by means of software running on a computer, and previously stored on a data carrier or transmitted over a signal transmission system." As currently amended, the specification states "The invention also relates to a data carrier in the form of a computer-readable storage medium storing the computer program." and "The invention can be implemented by means of hardware or by means of a software program running on a

computer, the software program having previously been stored on a data carrier, e.g., in the form of a computer-readable storage medium, or the software program having been previously transmitted to the computer over a signal transmission system.”.

As should be clear from the above, nowhere is it stated that the computer-readable storage medium may be transmitted over a signal transmission system. Rather, the specification indicates the computer-readable storage medium as being an example of a data carrier. In particular, the specification, on both pages 1 and 13, indicates that the data carrier is in the form of a computer-readable storage medium. While the specification states that the software program may have been previously transmitted over a signal transmission system, there is not disclosure or suggestion that the computer-readable storage medium is transmitted over a signal transmission system. Rather, as an unclaimed embodiment of the invention, the software program may be transmitted to the computer over a signal transmission system.

Appellants therefore submit that the invention as claimed in claim 10 is indeed statutory.

**(B) Whether Claims 1-10 Are Unpatentable Over
Childs, Jr. et al. In View Of Sibbald et al.**

35 U.S.C. 103(a) states:

"(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

The Childs, Jr. et al. patent discloses a system and method for musical sonification of data, in which music is generated in dependence on data values.

The Sibbald et al. patent discloses a method of processing an audio signal, in which Head-Related Transfer Functions area used to simulate a position in space of a stereo signal synthesized from a mono sound source.

As noted by the Examiner, "Child fails to show "a mapping unit for mapping the first value of the positionless data signal to a first position in a three-dimensional space around a user's head, and the second value of the positionless data signal to a second position in the three-dimensional space, wherein the audio processing unit changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value.""

In particular, Appellants note that Child et al., at col. 4, lines 51-66, states:

"In the mapping stage 14, the user establishes the appropriate musical rendering of the desired data. For example, the user is queried about data relationships, preferred musical styles, sound samples, and other data characteristics or preferences. The perception of sound is highly individualized, and the user benefits from guidance and assistance in obtaining the most pleasing and useable configuration of sound mappings. In various embodiments, the user can select sound schemes and approaches that reflect his or her individual preferences and listening style.

"In one embodiment, completion of the data to sound mapping stage yields sound parameters, as shown in FIG. 3, which are preferably suitable for real-time digital audio synthesis or MIDI. The sound parameters correspond to sound characteristics, such as pitch, volume, time signature, tempo, duration, envelope, timbre, space, and effects."

From the above, it should be apparent that Child et al. discloses the varying of any of a numerous variety of musical attributes in order to effect the mapping.

Further, at col. 11, lines 18-23, Child et al. states:

"One embodiment of the headphones preferably allow the listener to hear normal conversation while listening to the sonification. More advanced sound spatialization and localization techniques can also be used, including but not limited to, HRTF (head-related transfer functions) processing, amplitude panning, vector base amplitude panning (VBAP), and wave field synthesis."

From the above, it should be apparent that Child et al. contemplates the use of headphones with the sonification system, and acknowledges some of the capabilities of headphones, notably, sound spatialization and localization techniques using HRTF.

This capability of headphones is noted in Sibbald et al.

However, Appellants submit that this "grocery list" of attributes and capabilities does not render obvious the subject

invention, as claimed. This would be tantamount to providing a dictionary of the English language and then stating that this would render the works of Shakespeare obvious.

Rather, the subject invention specifically sets forth "an audio processing unit for delivering the audio signal with a characteristic dependent upon a positionless data signal having at least a first value and a second value" and "a mapping unit for mapping the first value of the positionless data signal to a first position in a three-dimensional space around a user's head, and the second value of the positionless data signal to a second position in the three-dimensional space", "wherein the audio processing unit changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value".

Appellants submit that it is only through impermissible hindsight reconstruction of the cited references that the Examiner is able to come up with the claimed invention.

Based on the above arguments, Appellants believe that the subject invention, as claimed, is not rendered obvious by the prior art and is patentable thereover. Therefore, Appellants respectfully request that this Board reverse the decisions of the Examiner and allow this application to pass on to issue.

Respectfully submitted,

by /Edward W. Goodman/
Edward W. Goodman, Reg. 28,613
Attorney

1. A data representation apparatus for representing data by means of an audio signal, said data representation apparatus comprising:

an audio processing unit for delivering the audio signal
5 with a characteristic dependent upon a positionless data signal having at least a first value and a second value; and

10 a mapping unit for mapping the first value of the positionless data signal to a first position in a three-dimensional space around a user's head, and the second value of the positionless data signal to a second position in the three-dimensional space,

wherein the audio processing unit changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position
15 when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value.

2. The data representation apparatus as claimed in claim 1, wherein the audio processing unit comprises a filter for applying a head related transfer functions to an input audio signal to obtain the output audio signal appearing to originate from the first
5 position and the second position.

3. The data representation apparatus as claimed in claim 1,
wherein said data representation apparatus further comprises a data
signal distributor for delivering the positionless data signal,
derivable from a measurement from a measurement device, to the
5 audio processing unit.

4. The data representation apparatus as claimed in claim 1,
wherein the mapping unit maps a collection of nominal values of the
positionless data signal to predetermined regions of three-
dimensional space.

5. The data representation apparatus as claimed in claim 1,
wherein the mapping unit maps a collection of numerical values of
the positionless data signal to positions on a curvilinear locus in
three-dimensional space.

6. The data representation apparatus as claimed in claim 1,
wherein said data representation apparatus further comprises
specification means for specifying a preferred mapping for the
mapping unit.

7. The data representation apparatus as claimed in claim 1,
wherein said data representation apparatus further comprises
selection means for enabling presentation of a first set of data
signal values by a first type of the audio signal and a second set
5 of data signal values by a second type of the audio signal.

8. A system for representing data by means of an audio signal, said system comprising:

an audio source for supplying an input audio signal;

a source of a positionless data signal having at least a first value and a second value;

a sound production device; and

a data representation apparatus for representing data by means of the audio signal,

wherein the data representation apparatus comprises:

an audio processing unit for providing the audio signal to the sound production device with a characteristic dependent on the value of the positionless data signal; and

a mapping unit for mapping the first value of the positionless data signal to a first position in a three-dimensional space around a user's head, and the second value of the positionless data signal to a second position in the three-dimensional space,

wherein the audio processing unit changes the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value.

9. A method of representing data by means of an audio signal, said method comprising the steps of:

processing and delivering the audio signal, using an audio processing unit, with a characteristic dependent on a positionless data signal having at least a first value and a second value; and

mapping the first value of the positionless data signal, using a mapping unit, to a first position in a three-dimensional space around a user's head, and the second value of the positionless data signal to a second position in the three-

10 dimensional space,

wherein the processing and delivering step includes changing the characteristic of the audio signal, resulting in the audio signal appearing, to a user listening to the audio signal, to originate from the first position when the positionless data signal has the first value, and from the second position when the positionless data signal has the second value.

10. A computer-readable storage medium having stored thereon a computer program for execution by a processor, enabling the processor to execute the method of claim 9.

11. (Cancelled).

(ix) Evidence Appendix

There is no evidence which had been submitted under 37 C.F.R. 1.130, 1.131 or 1.132, or any other evidence entered by the Examiner and relied upon by Appellant in this Appeal.

(x)

Related Proceedings Appendix

Since there were no proceedings identified in section (ii) herein, there are no decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 C.F.R. 41.37.